

Seung Hyun Lee

CONTACT INFORMATION

🏠 <https://lsh3163.github.io/seunghyunlee/>
✉ seungle@umich.edu

RESEARCH INTERESTS

Computer Vision: Multimodal Generative Models (Audio, Video, Medical Imaging)
Generative Model: Sequence Modeling, Diffusion Models
Artificial General Intelligence, Image & Video Generation

RESEARCH EXPERIENCE

Google Research, Mountain View, CA (Onsite) Jul 2023 - Mar 2024
Student Researcher
Projects: Pareto-optimal multi-reward reinforcement learning for text-to-image generation
Research Advisor: Feng Yang, Irfan Essa

Naver Papago, Pangyo, Korea Dec 2020 - Jun 2021
Research Intern @ Computer Vision Lab
Projects: Real-time tracking for optical character recognition

Yonsei University, Seoul, Korea Mar 2019– Nov 2020
Research Intern @ Severance Hospital CCIDS
Projects: Pathologic Complete Response Prediction after Neoadjuvant Chemoradiation Therapy for Rectal Cancer Using Radiomics and Deep Embedding Network of MRI

EDUCATION

Ph.D. in Computer Science and Engineering, University of Michigan Aug 2024 - May 2028
Research Advisor: Stella X. Yu

M.S. in Artificial Intelligence, Korea University Mar 2022 - Aug 2024
Collaborated with **Google Research**
Collaborated with **NVIDIA Research**

B.S. in Computer Science, University of Seoul Mar 2016 - Feb 2022
2 years of absence for obligatory military service
Undergraduate Research Assistant

- Medical AI, Yonsei University Severance Hospital CCIDS

CONFERENCE PUBLICATIONS (* Equal contribution)

Seung hyun Lee, Yinxiao Li, Junjie Ke, Innfarn Yoo, Han Zhang, Jiahui Yu, Qifei Wang, Fei Deng, Glenn Entis, Junfeng He, Gang Li, Sangpil Kim, Irfan Essa, Feng Yang, **Parrot: Pareto-optimal Multi-Reward Reinforcement Learning Framework for Text-to-Image Generation**, In *ECCV*, 2024, *Work done during Google Research internship*.

Seung hyun Lee, Wonseok Roh, Wonmin Byeon, SangHo Yoon, Chanyoung Kim, Jinkyu Kim*, Sangpil Kim*, **Sound-Guided Semantic Image Manipulation**, In *CVPR*, 2022.

Seung hyun Lee, Gyeongrok Oh, Wonmin Byeon, Chanyoung Kim, Won Jeong Ryoo, Sang Ho Yoon, Jihyun Bae, Jinkyu Kim*, Sangpil Kim*, **Sound-Guided Semantic Video Generation**, In *ECCV*, 2022.

Yujin Jeong, Won Jeong Ryoo, **Seung hyun Lee**, Da Bin Seo, Wonmin Byeon, Sangpil Kim, Jinkyu Kim, **The Power of Sound (TPoS): Audio Reactive Video Generation with Stable Diffusion**, *ICCV*, 2023.

Wonseok Roh, **Seung hyun Lee**, Won Jeong Ryoo, Gyeongrok Oh, Jakyung Lee, Soo Yeon Hwang, Hyung-gun Chi, Sangpil Kim, **Functional Hand Type Prior for 3D Hand Pose Estimation and Action Recognition from Egocentric View Monocular Videos**, *BMVC* Oral (< 5% acceptance rate), 2023.

JOURNAL PUBLICATIONS (* Equal contribution)	<p>Seung hyun Lee*, Hyung-gun Chi*, Gyeongrok Oh, Wonmin Byeon, Sang Ho Yoon, Hyunje Park, Wonjun Cho, Jinkyu Kim*, Sangpil Kim*, Robust Sound-Guided Image Manipulation, <i>Neural Networks</i>, 2024.</p> <p>Seung hyun Lee*, Sieun Kim*, Wonmin Byeon, Gyeongrok Oh, Sumin In, Hyeongcheol Park, Sang Ho Yoon, Sung-hee Hong, Jinkyu Kim, Sangpil Kim, Audio-Guided Implicit Neural Representation for Local Image Stylization, <i>Computational Visual Media–Accepted</i>, 2024.</p> <p>Minjoon Jung, Seung hyun Lee, Eun Seon Sim, Min Ho Jo, Yu Jin Lee, Hye Bin Choi, Junseok Kwon, Stagemix video generation using face and body keypoints detection, <i>Multimedia Tools and Applications</i>, 2022.</p> <p>Seung hyun Lee, Joonseok Lim, Jaeseung Shin, Sungwon Kim, Heasoo Hwang, Pathologic complete response prediction after neoadjuvant chemoradiation therapy for rectal cancer using radiomics and deep embedding network of mri, <i>Applied Sciences</i>, 2021.</p>						
PREPRINTS	<p>Seung hyun Lee, Sieun Kim, Innfarn Yoo, Feng Yang, Donghyeon Cho, Youngseo Kim, Huiwen Chang, Jinkyu Kim*, Sangpil Kim*, Soundini: Sound-Guided Diffusion for Natural Video Editing, <i>Collaboration with Google Research</i>.</p>						
WORKSHOP PUBLICATIONS	<p>Seung hyun Lee, Sang Ho Yoon, *Jinkyu Kim, *Sangpil Kim. Sound-Guided Semantic Image Manipulation. In <i>NIPSW–CtrlGen Workshop</i>, 2021.</p> <p>Seung hyun Lee, Nahyuk Lee, Chanyoung Kim, Wonjeong Ryoo, Jinkyu Kim, Sangho Yoon, Sangpil Kim. Audio-Guided Image Manipulation for Artistic Paintings. In <i>NIPSW–Machine Learning for Creativity and Design Workshop</i> , 2021.</p>						
SKILLS	<p>Programming Languages: Python, C/C++, Java.</p> <p>Tools: Deep Learning Frameworks (JAX, PyTorch, TensorFlow), Python Libraries (Diffuser, OpenCV, etc), Parallel Programming (CUDA).</p>						
AWARD AND HONORS	<table> <tbody> <tr> <td>Full scholarship from Korea University for Master’s Degree, Seoul Korea</td> <td>2022 - 2024</td> </tr> <tr> <td>Software Maestro 11th - Best Software talent discovery program, Korea</td> <td>2020</td> </tr> <tr> <td>President of Algorithm Club at University of Seoul</td> <td>2016 - 2018</td> </tr> </tbody> </table>	Full scholarship from Korea University for Master’s Degree, Seoul Korea	2022 - 2024	Software Maestro 11th - Best Software talent discovery program, Korea	2020	President of Algorithm Club at University of Seoul	2016 - 2018
Full scholarship from Korea University for Master’s Degree, Seoul Korea	2022 - 2024						
Software Maestro 11th - Best Software talent discovery program, Korea	2020						
President of Algorithm Club at University of Seoul	2016 - 2018						
TEACHING EXPERIENCE	<p>Korea University, Seoul, Korea</p> <ul style="list-style-type: none"> Teaching Assistant of Machine Learning Mar 2023 - Jun 2023 <p>LG CNS, Seoul, Korea</p> <ul style="list-style-type: none"> Anomaly Detection Course for LG CNS Executives and Employees Mar 2023 - Jun 2023 						
ACADEMIC SERVICE	<p>Reviewer of,</p> <ul style="list-style-type: none"> ECCV 2024 Frontiers in Signal Processing, section Image Processing 						
PATENTS	<p>Seunghyun Lee. “Image Quality Improvement Apparatus Using Artificial Neural Network”. <i>Korea</i> 1020200021991, filed 20.02 issued 21.09.</p>						